

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:)
KUIPERS, CHARLES et al.)

Serial No.:)

Filed:)

Title:)

BEARING-LIKE DEVICE USING)
MAGNETIC FORCE TO ACTIVELY)
AID OR ENHANCE TURNING OR)
SPINNING MOVEMENT)

Group Art Unit No.:

Examiner:

Mailstop Patent Application
Commissioner For Patents
Post Office Box 1450
Alexandria, VA 22313-1450

PRELIMINARY REMARKS

Prior to examination on the merits, entry and consideration of the following preliminary remarks is respectfully requested.

In the Claims:

Status of Claims

The claims are unaffected by these preliminary remarks, such that claims 1-18 are pending in the application as originally filed.

Remarks

The present application is a continuation of an earlier-filed parent application in which, in an Office Action dated July 24, 2003, the Examiner:

rejected claims 1-3 and 6-20 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which the Applicant regards as the invention;

rejected claims 1-6 and 9-13 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,037,887 (hereinafter referred to as "Germain") in view of U.S. Patent No. 4,379,598 ("Goldowsky") and further in view of U.S. Patent No. 5,079,458 ("Schuster"); and

indicated that claims 7, 8, and 16-20 would be allowable if amended appropriately.

In response, claims 1-6 and 9-15 were canceled in the parent application without prejudice or disclaimer, and claims 7, 8, and 16-20 were appropriately amended. The present continuation application pursues prosecution of claims similar or identical to those that were canceled.

With regard to the Examiner's previous rejections under 35 U.S.C. §112, second paragraph, the Applicant responds as follows. The Examiner has asserted that the terms "approximately" and "substantially" are not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The terms approximately and substantially do appear in the specification, clearly indicating that the Applicant anticipated minor deviations from perfection. In fact, such minor deviations are unavoidable in any manufacturing process. One with ordinary skill in the art would understand the necessity of and potential degree to which the various values identified in the specification might need be changed in order to accommodate these minor deviations. As the Examiner noted in his substantive rejections of claims 2, 6, 9, and 13, "discovering the optimum or workable ranges involves only routine skill in the art". *In re Aller*, 105 USPQ 233. Thus, the Applicant has purposefully not limited its claims to exact values because - as one with ordinary skill in the art - the Applicant properly anticipates minor variations to accommodate minor deviations arising from manufacturing considerations. In that light, the Applicant respectfully asserts that the claims are proper and should not

have been rejected under 35 U.S.C. §112, second paragraph. It should be noted that these terms have for the most part been removed from the present claims, but may be introduced during prosecution.

With regard to the Examiner's previous rejections under 35 U.S.C. §103(a) over the combination of Germain, Goldowsky, and Schuster, the Applicant responds as follows. Germain concerns universal-joint assemblies and self-aligning thrust bearings, but does not disclose any magnetic components or features whatsoever and is therefore of extremely limited relevance to the present invention.

Goldowsky discloses a magnetic bearing mounted on a shaft, with the bearing comprising an inner ring which may be affixed to the shaft, and an outer ring which is rotatable with respect to the shaft. The inner and outer rings both present surface-mounted annularly-arranged magnets positioned such that opposing poles are located adjacent one another, thereby creating a repulsive effect between the inner and outer rings. The purpose of these magnets is to maintain a proper operating orientation of the shaft through a repulsive restorative force that acts whenever the shaft is forced out of its proper operating orientation by a radial or axial load. Thus, Goldowsky's bearing merely repels radially or axially and is therefore "passive" in the sense that it does not actively aid or enhance the rotational movement of the shaft. In contrast to the Examiner's assertion, Goldowsky's bearing does not and cannot repel and turn.

In stark contrast to Goldowsky, the bearing of the present invention, as claimed in claim 1, is an active bearing in that it includes a first magnetic component arranged in a tapering spiral and a second magnetic component arranged substantially circumferentially such that the first and second magnetic components magnetically interact so as to both repel and turn, thereby actively aiding the turning or spinning movement of any attached shaft or other member.

Schuster concerns a magnetic helix non-contacting linear drive for use in driving magnetic suspended railways and elevators. Schuster admits as related prior art, for example, drive systems comprising permanent magnets arranged along a guideway or track, and an electromagnet of constantly changing polarity associated with a vehicle such that the vehicle is drawn along the permanent magnets.

In stark contrast to Schuster, the present invention is concerned with rotational motion in a bearing rather than linear motion in a transportation vehicle, and, to that end, uses a tapered arrangement of magnetic material rather than a helical arrangement of magnetic material.

The Applicant respectfully asserts that Schuster is clearly non-analogous art with regard to the present invention, and therefore the rejections under 35 U.S.C. §103(a) relying on Schuster are improper. More specifically, the primary test for determining

whether a prior art reference is properly analogous with respect to an invention is as follows:

Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the same field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. *In re Clay*, 23 USPQ2d 1058, 1060 (Fed. Cir. 1992).

Furthermore, an invention cannot be considered to be within the field of endeavor of a prior art reference merely because both relate to the same industry. *Id.* 1060. However, "[a] reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to the inventor's attention in considering his problem". *Id.* 1061. Patent examination is necessarily conducted by hindsight, with complete knowledge and benefit of the applicant's invention as a guide. *In re Oetiker*, 24 USPQ2d 1443, 1447 (Fed. Cir. 1992). For this reason, it is necessary to consider the "reality of the circumstances" in deciding in which fields a person of ordinary skill in the art would reasonably be expected to look for the solution to the problem facing the inventor. *Id.* 1447. Ultimately, a rejection based on non-analogous art cannot be sustained. *Id.* 1061.

The test set forth in *In re Clay* was tellingly applied, for example, in *Wang Laboratories, Inc. v. Toshiba Corp.*, which is cited by and discussed in MPEP §2141.01(a) in the context of determining analogousness in the electrical arts. *Wang Laboratories, Inc. v. Toshiba Corp.*, 26 USPQ2d 1767 (Fed. Cir. 1993). Wang Laboratories, Inc. (hereinafter referred to as "Wang"), as assignee, brought suit against a number of parties, including Toshiba Corp. and NEC Corp., for infringement of U.S. Patent Nos. 4,656,605 (hereinafter referred to as the "'605 patent") and 4,727,513 (hereinafter referred to as the "'513 patent"). *Id.* 1070. These patents relate to and claim certain types of single in-line memory modules (SIMMs) (hereinafter referred to as the "Wang SIMMs"). *Id.* 1770. At trial, a jury found that SIMMs manufactured by Toshiba Corp. and NEC Corp. infringed certain claims of the '605 and '513 patents. *Id.* 1770. In relevant part, Toshiba Corp. and NEC Corp. moved for JNOV, which was denied, and thereafter appealed. *Id.* 1770.

On appeal, Toshiba Corp. and NEC Corp. argued that the claims at issue were invalid for obviousness under 35 U.S.C. §103 in light of U.S. Patent No. 4,281,392 to Allen-Bradley Co. and its commercial counterpart the X9 SIMM (hereinafter referred to as the

"Allen-Bradley SIMM"). *Id.* 1772. Toshiba Corp. and NEC Corp. argued that the Allen-Bradley patent and the Allen-Bradley SIMM were analogous to the claimed subject matter and effective to render the relevant claims of the '605 and '513 patents invalid. *Id.* 1772.

The court held that an adequate jury instruction regarding analogous art had been provided at trial, and held that the jury's finding of non-analogous art was supported by substantial evidence. *Id.* 1773. Specifically, the court cited the criteria set forth in *In re Clay*, and noted that "[t]he Allen-Bradley art is not in the same field of endeavor as the claimed subject matter merely because it relates to memories ... [Allen-Bradley] involves memory circuits in which modules of varying sizes may be added or replaced; in contrast, the subject patents teach compact modular memories". *Id.* 1773.

In finding substantial evidence to support the jury's finding, the court noted that the Wang SIMMs were pertinent to the field of personal computers, and were designed to provide compact computer memory with minimum size, low cost, easy repairability, and easy expandability. *Id.* 1773. Contrastingly, the Allen-Bradley SIMMs were developed for use in a controller of much larger industrial machinery and could not be used in a personal computer. *Id.* 1773. Thus, while the Wang SIMMs were purposefully designed to be small, size was not a consideration for the Allen-Bradley SIMMs. *Id.* 1773. For these reasons, the court held, the Allen-Bradley prior art was non-analogous and not reasonably pertinent to the '605 and '513 patents. *Id.* 1773.

The test set forth in *In re Clay* was also tellingly applied, for example, in *In re Oetiker*, which is cited by and discussed in MPEP §2141.01(a) in the context of determining analogousness in the mechanical arts. *In re Oetiker*, 24 USPQ2d 1443 (Fed. Cir. 1992). In *In re Oetiker*, an improvement was claimed to a stepless, earless metal clamp, with the improvement being a preassembly hook which serves to both maintain a preassembly condition of the clamp and to disengage automatically when the clamp is tightened. *Id.* 1445. All claims were rejected over the combination of U.S. Patent No. 4,492,004 to Oetiker, which disclosed the unimproved clamp, and U.S. Patent No. 3,426,400 to Lauro, which disclosed a plastic hook and eye fastener for use in garments. *Id.* 1445.

Oetiker argued during prosecution that Lauro's garment hook was non-analogous art in that a person of ordinary skill seeking to solve the problem facing Oetiker would not look to the garment art for the solution. *Id.* 1445. The Examiner argued that because garments commonly use hooks for securement, a person faced with the problem of unreliable maintenance of the pre-assembly configuration of an assembly line metal hose clamp would look to the garment industry art. *Id.* 1445. On Appeal, the Board held that Lauro was analogous art because both Lauro's and the Oetiker's inventions relate to "a hooking problem". *Id.* 1445.

The court, however, disagreed, stating that it had not been shown that a person of ordinary skill seeking to solve the problem facing Oetiker would reasonably be expected or motivated to look to fasteners for garments. Furthermore:

The combination of elements from non-analogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a *prima facie* case of obviousness. There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge cannot come from the applicant's invention itself. *Id.* 1446.

In the present case, Schuster is concerned with the problem of linear drives for driving magnetic suspended railways and elevators, while the present invention is concerned with actively enhancing rotational motion of a bearing. Applying the criteria of *In re Clay* as interpreted in *Wang Laboratories, Inc.* and in *In re Oetiker*, Schuster is not in the same field of endeavor as the present invention merely because both may broadly relate to using magnetic fields to enhance movement. Just as all memories were not the same in *Wang Laboratories, Inc.*, nor all hooking problems the same in *In re Oetiker*, all magnet-enhanced movement problems are not the same problems and not in the same field of endeavor. Thus, the teachings of Schuster are not reasonably or sufficiently pertinent or related to the endeavor of the present invention, and therefore an inventor looking to improve rotational movement in bearings could not reasonably be presumed to know of or seek inspiration from Schuster as Schuster is concerned only with linear movement on extremely large scales for use in the field of transportation.

As Schuster is clearly non-analogous art with regard to the present invention, it cannot provide a proper basis for an obviousness rejection under 35 U.S.C. §103.

The Applicant also respectfully asserts that the requisite *prima facie* case of obviousness has not been properly established in that the cited prior art references do not disclose all of the claimed limitations, and therefore the rejections under 35 U.S.C. §103(a) relying on Schuster are improper. More specifically, a prior art reference (or combination of references) must teach or suggest all of the claim limitations. MPEP §706.02(j), citing *In re Vaeck*, 1438 (Fed. Cir. 1991). Obviousness, it will be appreciated, can be a problematic basis for rejection because the Examiner, in deciding that a feature is obvious, has benefit of the Applicant's disclosure as a blueprint and guide, whereas one with ordinary skill in the art would have no such guide, in which light even an exceedingly complex solution may seem easy or obvious. Furthermore, once an obviousness rejection

has been made, the Applicant is in the exceedingly difficult position of having to prove a negative proposition (i.e., non-obviousness) in order to overcome the rejection. For these reasons, MPEP §2142 places upon the Examiner the initial burden of establishing a *prima facie* case which requires, among other things, that there be identified some motivation or suggestion in the prior art or in the knowledge of one with ordinary skill to modify the reference or to combine reference teachings. If the Examiner fails to establish the requisite *prima facie* case, the rejection is improper and will be overturned. *In re Rijckaert*, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). Only if the Examiner's burden is met does the burden shift to the applicant to provide evidence to refute the rejection.

The Examiner must satisfy three criteria in order to establish the requisite *prima facie* case of obviousness: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine their teachings; (2) there must be a reasonable expectation of success; and (3) the prior art reference (or combination of references) must teach or suggest all the claim limitations. MPEP §706.02(j), citing *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991). Furthermore, "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992); see also *In re Gordon*, 221 USPQ2d 1125, 1127 (Fed. Cir. 1984). Additionally, "if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." MPEP §2143.01.

In meeting this initial burden, the Examiner "cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention" *In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on the applicant's disclosure. *In re Vaeck*, 20 USPQ 2d 1438, 1442 (Fed. Cir. 1991). Thus, "[m]easuring a claimed invention against the standard established by section 103 requires the oft-difficult but critical step of casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. See e.g., *W. L. Gore & Assoc., Inc. v. Garlock, Inc.*, 220 USPQ 303, 313 (Fed. Cir. 1983).

The combination/modification asserted by the Examiner makes no sense for Goldowsky and runs counter to the teachings of Schuster, and therefore there can be no proper motivation or suggestion for the asserted combination/modification. Goldowsky is unconcerned with actively aiding the motion of its shaft and is instead concerned only with the problem of maintaining the shaft centered and in an otherwise proper operating

position. Adding a tapering spiral to Goldowsky would not further its expressed purposes and therefore Goldowsky cannot be said to support the desirability of the asserted combination/modification. Schuster is unconcerned with either rotational motion or bearings and is instead concerned only with the linear motion of transportation vehicles. Modifying Schuster's non-tapering helix to be a tapering spiral would directly interfere with this function. Thus, Schuster teaches away from and therefore cannot be said to support the desirability of the asserted combination/modification.

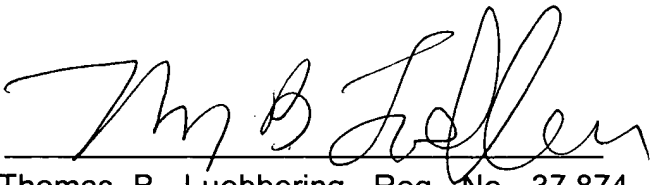
Furthermore, even if it were true that the cited references can be properly combined, the result does not disclose all of the limitations of the claims to the present invention. The claims require a conical body or a magnetic component arranged in a tapering spiral. Though the Examiner has asserted that the cited prior art, taken together, discloses a "linear tapering spiral", the Applicant is unable to find such disclosure or other basis for the Examiner's assertion. Goldowsky discloses magnets oriented angularly relative to a shaft; and Schuster discloses magnets arranged helically, but the leap in logic necessary to combine the two to arrive at the claimed present invention is simply not supported in the references or in the knowledge of one with ordinary skill in the art.

Thus, no proper motivation or suggestion for combining the cited prior art references can exist because the proposed combination would undermine the purposes and teachings of those references, and, in any event, the resulting combination does not disclose all of the limitations of the claims. The requisite *prima facie* case of obviousness has therefore not been established.

The Applicant respectfully asserts that all pending claims are in condition for allowance, and therefore respectfully requests a corresponding Notice of Allowance.

In the event of any questions, the Examiner is urged to call the undersigned. Any additional fee which might be due in connection with this application should be applied against Deposit Account No. 19-0522.

Respectfully Submitted,
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